

CLAIMS

1. (Currently Amended) Composite grinding roller (1), produced by casting, comprising peripheral inserts (5) made of a material with high wear resistance and great hardness, sealed during said casting in a ductile matrix (19), said ductile matrix (19) infiltrating around or into the peripheral insert (5) during this casting in such a way as to establish close contact at the interface between said peripheral inserts (5) and said ductile matrix (19), said roller (1) comprising first zones subjected to heavy wear (14) as well as second zones subjected to light wear (13), wherein in said zone (14) ; said roller (1) has, on its peripheral surface, inserts (5) with an abutting part (6,7) and in said second zone (13) a non-abutting part, the gap in said non-abutting part (12) being filled by said ductile material (19) of the cast matrix,during the casting, allowing sufficient mechanical fixation for the inserts.

2. (Original) Roller as in Claim 1, wherein the abutting surfaces (6) and (7) coming into contact with their neighbours in successive inserts have a contact line corresponding to the radii of the circle formed by the roller (1).

3. (Currently Amended) Roller as in Claim 1 or 2,Roller as in Claim 1, wherein the ratio of the lengths of the abutting faces to the lengths of the zones where the faces do not abut is greater than or equal to 0.2.

4. (Original) Roller as in Claim 3, wherein the ratio between the lengths of the zones where the faces abut to the lengths of the zones where the faces do not abut is between 0.2 and 20.

5. (Currently Amended) Roller as in any one of Claims 1 to 4,Roller as in Claim 1, wherein the wear resistance of the inserts (5), in particular in the abutting parts, is increased by a ceramic reinforcement selected from the group of oxides, carbides, nitrides or borides.

6. (Currently Amended) ~~Roller as in any one of the preceding claims, Roller as in~~
Claim 1, wherein said insert (5) comprises at least one undercut (15) that allows its sealing into said matrix cast in ductile material (19).

7. (New) Roller as in Claim 2, wherein the ratio of the lengths of the abutting faces to the lengths of the zones where the faces do not abut is greater than or equal to 0.2.

8. (New) Roller as in Claim 2, wherein the wear resistance of the inserts (5), in particular in the abutting parts, is increased by a ceramic reinforcement selected from the group of oxides, carbides, nitrides or borides.

9. (New) Roller as in Claim 3, wherein the wear resistance of the inserts (5), in particular in the abutting parts, is increased by a ceramic reinforcement selected from the group of oxides, carbides, nitrides or borides.

10. (New) Roller as in Claim 4, wherein the wear resistance of the inserts (5), in particular in the abutting parts, is increased by a ceramic reinforcement selected from the group of oxides, carbides, nitrides or borides.

11. (New) Roller as in Claim 7, wherein the wear resistance of the inserts (5), in particular in the abutting parts, is increased by a ceramic reinforcement selected from the group of oxides, carbides, nitrides or borides.

12. (New) Roller as in Claim 2, wherein said insert (5) comprises at least one undercut (15) that allows its sealing into said matrix cast in ductile material (19).

13. (New) Roller as in Claim 3, wherein said insert (5) comprises at least one undercut (15) that allows its sealing into said matrix cast in ductile material (19).

14. (New) Roller as in Claim 4, wherein said insert (5) comprises at least one undercut (15) that allows its sealing into said matrix cast in ductile material (19).

15. (New) Roller as in Claim 5, wherein said insert (5) comprises at least one undercut (15) that allows its sealing into said matrix cast in ductile material (19).

16. (New) Roller as in Claim 7, wherein said insert (5) comprises at least one undercut (15) that allows its sealing into said matrix cast in ductile material (19).

17. (New) Roller as in Claim 8, wherein said insert (5) comprises at least one undercut (15) that allows its sealing into said matrix cast in ductile material (19).

18. (New) Roller as in Claim 9, wherein said insert (5) comprises at least one undercut (15) that allows its sealing into said matrix cast in ductile material (19).

19. (New) Roller as in Claim 10, wherein said insert (5) comprises at least one undercut (15) that allows its sealing into said matrix cast in ductile material (19).

20. (New) Roller as in Claim 11, wherein said insert (5) comprises at least one undercut (15) that allows its sealing into said matrix cast in ductile material (19).